

Application No. 09/845,985

REMARKS

Claims 1-4, 6-10, 14-20, 55-57 and 62-70 are pending. Claims 12, 21, 48-50, 52-54 and 58-61 are canceled without prejudice to advance prosecution. Claims 1-4, 6-10, 14-16, 19, 20 and 55-57 are amended and new claims 62-70 are introduced. The amended claims have been amended to specify that the particle collections are within a cathode active composition and to remove the term "about" in reference to average particle diameters. This change in the preamble is well supported through the specification, for example, at page 10, lines 11-25. Claim 16 has also been amended to generalize cathode to positive electrode, as supported in the specification at page 10, lines 11-25. Correspondingly, claims 19 and 20 have been amended to replace anode with negative electrode, which is supported by the specification, for example, at page 40, line 11 to page 41, line 2. New claims 62-70 correspond with claims 7-10 and 16-20 with a change in dependency to claim 55. Applicants note that a greater number of claims have been canceled than have been added. No new matter is introduced.

Applicants thank the Examiner for the courtesy extended to their undersigned representative in a phone interview on 11 January 2007. In the phone interview, Applicants' representative presented issues regarding perceived weaknesses in the cited references in view of evidence presented by Applicants. Applicants' representative and the Examiner discussed the crystal structure of the claimed materials and the distinctions with the materials presented in the cited references. The possibility was discussed of changing the emphasis of the claims from a collection of particles to an electrode active composition to focus the distinctions and improvements presented by applications. Applicants have followed this strategy in the above claim amendments and with respect to the following remarks.

Applicants respectfully request reconsideration of the rejections based on the following further comments.

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Rejection Under 35 U.S.C. § 112

The Examiner rejected claims 1-4, 6-10, 12-21 and 48-61 under 35 U.S.C. § 112, second paragraph as being indefinite. For conciseness, Applicants incorporate by reference their earlier arguments. In view of Applicants' arguments that the PTO has allowed many other applications with the offending language, the Examiner asserts that there is close prior art that precludes the current language. While Applicants maintain that the term is clear in the context of nanotechnology as referring to the inherent uncertainty in measurements, Applicants have deleted the term with respect to average particle sizes. Applicants maintain that in imprecise measurements the term about is implied so that the deletion of the term about does not change the claim scope in this context. With respect to narrow particle size distributions and corresponding highly uniform materials, there is no close prior art in the average particle size range with respect to uniform submicron phosphate compositions, and the term has been maintained. Applicants respectfully request withdrawal of the rejection of claims 1-4, 6-10, 12-21 and 48-61 under 35 U.S.C. § 112, second paragraph as being indefinite.

Rejection Over Kamauchi et al. and Manev

The Examiner rejected claims 1-4, 6, 7, 10, 12, 14-17, 19-21, 48-50, 52, 53 and 55-61 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,538,814 to Kamauchi et al. (the Kamauchi patent) in view of U.S. Patent 5,789,115 to Manev (the Manev patent). Applicants previously submitted Declaration evidence that the grinding approach suggested in the Kamauchi patent was not suitable for producing the uniform materials claimed in the pending claims above. Furthermore, Applicants have presented results of surprising improved battery performance from nanoparticles of lithium iron phosphate. The Examiner cited the Manev patent for teaching that "the mean particle size and the particle size distribution are two of the basic properties characterizing the positive electrode intercalation materials." To advance

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prosecution of the application, Applicants have amended the claims to indicate that the particles are within an electrode active material. Applicants assert that the Manev patent does not make up for the deficiencies of the Kamauchi patent, that the combined teachings of the references do not enable the production of the claimed materials and that the Manev patent teaches away from the claimed invention. Thus, the combined teachings of the cited references do not render Applicants' invention *prima facie* obvious. Applicants respectfully request reconsideration of the rejection based on the following comments.

The Manev patent has several severe deficiencies with respect to the proposed combination. The Manev patent teaches the formation of lithium manganese oxide particles with a particle size of greater than a micron. The compositions are formed from solid state reactions starting with manganese oxide materials, see column 3, lines 33-63. The Manev patent explicitly indicates that the manganese reactant compositions can be milled prior to reacting the composition to form the lithium composition. See column 4, lines 3-5. However, Manev explicitly teaches that it is undesirable to mill the electrode active material. See column 2, lines 17-20. Thus, Manev explicitly teaches away from its combination with the Kamauchi patent with respect to milling electrode active compositions since such milling degrades resulting battery performance. Furthermore, Manev teaches that the particles should not necessarily be too small. See column 1, lines 50-67. This is based on a predicted decrease in performance for smaller particles.

On page 12 of the Office Action, the Examiner acknowledged that Applicants submitted two articles showing that an "electrode with uniform submicron particle sizes have improved rate performance in a battery." The Office Action further states that this "is exactly what is taught in Manev (col. 1, lines 40-55) and is the basis for motivation for using the particles of Kamauchi in this distribution range." With all due respect, this is incorrect with respect to Manev. Manev at column 1, lines 50-67 as well as throughout teaches that the particles should not be submicron

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and that the particles will loose performance if the particles are submicron. In view of discussions with the Examiner, Applicants have amended their claims to recite an electrode active composition to emphasize the non-obvious nature of the claimed materials in battery performance. Since Kamauchi only teaches milling to form their submicron materials, and Manev teaches that milling to reduce particle size is undesirable and submicron particles are undesirable, the cited references clearly do not render the claimed electrode active compositions *prima facie* obvious.

In summary, the cited references do not point to Applicants' claimed invention involving electrode active compositions, the combined teachings of the cited references do not provide a reasonable expectation of success and the claimed materials have unexpectedly improved performance, as demonstrated with similar material recently synthesized. Since there is no *prima facie* obviousness over the cited references, Applicants respectfully request withdrawal of the rejection of claims 1-4, 6, 7, 10, 12, 14-17, 19-21, 48-50, 52, 53 and 55-61 under 35 U.S.C. § 103(a) as being unpatentable over the Kamauchi patent in view of the Manev patent.

Rejection Over Kamauchi et al. Manev et al. and Goodenough et al.

The Examiner rejected claims 8, 9 and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,910,382 to Goodenough et al. (the Goodenough patent) in view of the Kamauchi patent and the Manev patent as applied to the corresponding independent claims. The deficiencies of the Kamauchi patent and the Manev patent are described in detail above. The Goodenough patent does not make up for the deficiencies of the Kamauchi patent and the Manev patent described in detail above. In particular, the Goodenough patent does not teach or suggest anything about particle size or uniformity with respect to electrode active compositions. Therefore, the combined teachings of the Kamauchi patent, the Manev patent and the Goodenough patent do not render claims 8, 9 and 18 *prima facie* obvious. Applicants

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respectfully request withdrawal of the rejection of claims 8, 9 and 18 under 35 U.S.C. § 103(a) as being unpatentable over the Goodenough patent in view of the Kamauchi patent and the Manev patent as applied to the corresponding independent claims.

Rejection Over Bodiger et al. and Bi et al.

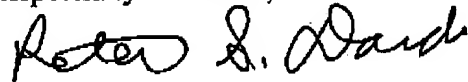
The Examiner rejected claims 54, 58, 59 and 61 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,849,827 to Bodiger et al. (the Bodiger patent) in view of U.S. Patent 5,952,125 to Bi et al. (the Bi patent). While Applicants respectfully disagree with the Examiner's assertions, these claims have presently been canceled without prejudice. Thus, this rejection is presently moot. Applicants respectfully request withdrawal of the rejection of claims 54-56, 58, 59 and 61 under 35 U.S.C. § 103(a) as being unpatentable over the Bodiger patent in view of the Bi patent.

CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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